

Decalin

Decalin [decahydronaphthalene] is a widely used industrial solvent for fats, resins, oils and waxes. It is used as a paint thinner and paint remover, as a substitute for turpentine in paints, lacquers, and varnishes, and is a constituent of shoe polishes, stain removers, floor waxes, motor fuels and lubricants (NTP, 2005). Decalin has been detected in ambient air, wildfire smoke, and vehicle exhaust. It has been measured in indoor air, drinking water, and the breath of non-smokers, indicating the potential for widespread exposure to the general population.

Decalin passed the animal data screen, underwent a preliminary toxicological evaluation, and is being brought to the Carcinogen Identification Committee for consultation. This is a compilation of the relevant studies identified during the preliminary toxicological evaluation.

Epidemiological data

No cancer epidemiology studies were identified.

Animal carcinogenicity data

- Two-year inhalation studies
 - Male and female B6C3F₁ mice: NTP (2005); Dill *et al.* (2003)
 - *Increases in hepatocellular adenoma and carcinoma (combined) (by pairwise comparison) and uterine stromal polyps and sarcoma (combined) (by trend) in females*
 - *Increases in hepatocellular adenoma and carcinoma (combined) (by trend) in males*
 - Male and female F344/N rats: NTP (2005); Dill *et al.* (2003)
 - *Increases in renal tubule adenoma and carcinoma (combined) and combined benign and malignant pheochromocytoma of the adrenal medulla in males (by pairwise comparison and trend)*
 - *No treatment-related tumor findings in females*

Other relevant data

- Genotoxicity
 - *Salmonella typhimurium* reverse mutation assays (*negative*) and *in vivo* mouse peripheral blood erythrocyte micronucleus assays (*positive in male, negative in female mice*): NTP (2005, p. 9, p. 66)
 - Reviews and compilations: CCRIS (2006), including mouse lymphoma cell mutation assays (*negative*) and other tests presented above in NTP (2005).

- Mechanistic considerations
 - Male rat kidney tumors and α_{2u} -globulin nephropathy: Doi *et al.* (2007); NTP (2005, p. 67); Dill *et al.* (2003)

References¹

Chemical Carcinogenesis Research Information System (CCRIS, 2006)
<http://toxnet.nlm.nih.gov> (accessed on April 2, 2009).

Dill JA, Lee KM, Renne RA, Miller RA, Fuciarelli AF, Gideon KM, Chan PC, Burka LT, Roycroft JH (2003). α_{2u} -globulin nephropathy and carcinogenicity following exposure to decalin (decahydronaphthalene) in F344/N rats. *Toxicol Sci* **72**(2):223-34.

Doi AM, Hill G, Seely J, Hailey JR, Kissling G, Bucher JR (2007). α_{2u} -globulin nephropathy and renal tumors in national toxicology program studies. *Toxicol Pathol* **35**(4):533-40.

National Toxicology Program (NTP, 2005). *NTP Technical Report on the Toxicology and Carcinogenesis Studies of Decalin (CAS No.91-17-8) in F344/N Rats and B6C3F₁ Mice and a Toxicology Study of Decalin in Male NBR Rats (Inhalation Study)*. NTP TR 513. NIH publication No. 05-4447. U.S. Department of Health and Human Services, NIH, Research Triangle Park, NC.

¹ Excerpts or the complete publication have been provided to members of the Carcinogen Identification Committee, in the order in which they are discussed in this document.